

Notice of Allowability

Application No.

10/698,045

Examiner

Mike Rahmjoo

Applicant(s)

JONES ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/30/03.
2. ☒ The allowed claim(s) is/are 1-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION
EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Donovan on 05/01/2007.

The application has been amended as follows:

Please amend claims 1, 16 and 18 as follows; change the dependency of claim 6 from 5 into 1; and cancel claims 3,4,5,17,24, and 25 thereafter.

As per claim 1:

A threaded fastener inspection system comprising: a conveyor; at least one imaging device, wherein said at least one imaging device images said threaded fasteners at a plurality views during rotation of said threaded fastener along said conveyor; and a computer processor interfaced with said imaging device, wherein said computer processor is programmed to recognize and detect threaded fastener damage ; wherein said conveyor comprises: a rail; and a belt, wherein a portion of said belt is aligned along the length of said rail so that said threaded fasteners are secured between said belt and said rail and

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so that movement of said belt results in the rotation of said threaded fastener along said rail; and wherein said rail is a spring loaded rail; and wherein said at least one imaging device captures overlapping images of said threaded fasteners as said threaded fastener travels within the range of view of said at least one imaging device.

As per Claim 16:

A threaded fastener inspection system comprising: a conveyor, comprising: a rail; and a belt, wherein a portion of said belt is aligned along the length of said rail so that said threaded fasteners are secured between said belt and said rail and so that movement of said belt results in the rotation of said threaded fastener along said rail; at least one imaging device, wherein said at least one imaging device images said threaded fasteners at a plurality views during rotation of said threaded fastener along said conveyor; a computer processor interfaced with said imaging device, wherein said computer processor is programmed to recognize and detect threaded fastener damage; and a sorter positioned at the distal end of said conveyor, wherein said sorter is activated when said computer processor identifies a defective threaded fastener so that damaged threaded fasteners are sorted from undamaged threaded fasteners; wherein said computer processor is programmed to analyze the major and minor diameters of said threaded fastener at said plurality of views and compare said major and minor diameters to predetermined values to detect threaded fastener damage.

As per claim 18:

A method of identifying damaged threaded fasteners, comprising: providing

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threaded fasteners; rotating said threaded fasteners; imaging said threaded fasteners at a plurality of views during said rotation; analyzing said views to determine if said threaded fasteners are damaged; and sorting damaged threaded fasteners from undamaged threaded fasteners; wherein said imaging step includes capturing overlapping images of said threaded fasteners as said threaded fastener travels within the range of view of said at least one imaging device.
; wherein said imaging step includes capturing six images of said threaded fasteners, one for each 30 degrees of rotation said threaded fastener undergoes, as said threaded fastener travels within the range of view of said at least one imaging device.

Allowable Subject Matter

Claims 1- 25 are allowed.

The following is an examiner's statement of reasons for allowance:

None of the prior art, either singularly or in combination, fairly teaches or suggests applicant's claimed invention wherein applicant recites as follows:

As per claim 1:

wherein said rail is spring loaded rail; and wherein said at least one imaging device captures overlapping images of said threaded fasteners as said threaded fastener travels within the range of view of said at least one imaging device.

As per claim 16:

Wherein said computer processor is programmed to analyze the major and minor diameters of said threaded fastener at said plurality of views and compare said major and minor diameters to predetermined values to detect threaded fastener damage.

As per claim 18:

Wherein said imaging step includes capturing six images of said threaded fasteners, one for each 30 degrees of rotation said threaded fastener undergoes, as said threaded fastener travels within the range of view of said at least one imaging device.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5823356 teaches an inspection device for inspecting production threaded members wherein the threaded members are routed to a test station to functionally inspect the thread profile of each threaded member to ensure that when the threaded member is matched with a corresponding threaded hole in an engine

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block or, in the alternative, a threaded nut, the threaded member will mate properly to serve its intended purpose.

US Patent 6111601 teaches a non-contact gaging method and apparatus using a directional light beam develops a silhouette image on a CCD camera detector array; the image spanning opposite edges of an object to be gauged. The three dimensional object is imaged on the two dimensional camera array and, by means of computer analysis of pixels output from the camera, precise measurements to MIL Standards of physical dimensions are made at high rates for high volume production.

US 3583451 teaches vacuum is established within a rubber sleeve telescoped over a screwdriver and holds a threaded screw in driving engagement with the screwdriver as the latter is rotated and advanced by a power driven spindle to drive the screw into a workpiece. If the screwdriver is advanced without the screw being held in the sleeve, the resulting absence of vacuum is detected and is used to produce a signal causing retraction of the screwdriver short of the workpiece. Each time the screwdriver is retracted, a blast of air is shot through the sleeve to eject any screw that may have been improperly retained in and retracted with the sleeve. In another embodiment, the vacuum is established within a wrench-type socket carried on the end of the spindle.

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Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Rahmjoo whose telephone number is 571-272-7789. The examiner can normally be reached on 8 AM- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mike Rahmjoo

May 7, 2007



**MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
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